IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants:	Sanjay H. Patel, et al.
Serial No.:	10/501,653
Filing Date:	July 15, 2004
Title:	Wireless Distribution & Collection System
Examiner:	Halim, Sahera
Art Unit:	2457
Confirmation No.:	5131

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Commissioner for Patents
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Alexandria, VA 22313-1450

APPELLANT'S BRIEF

This brief is in furtherance of the Notice of Appeal, filed in this case on May 15, 2009.

The fees required under § 1.17(c), and any required petition for extension of time for filing this brief and fees therefore, are dealt with in the accompanying Transmittal of Appeal Brief.

I. REAL PARTY IN INTEREST

The real party in interest in this appeal is the following party: Magna Light Corporation

II. RELATED APPEALS AND INTERFERENCES

With respect to other appeals or interferences that will directly affect, or be directly affected by, or have a bearing on the Board's decision in the pending appeal, there are no such appeals or interferences.

III. STATUS OF CLAIMS

A. **TOTAL NUMBER OF CLAIMS IN APPLICATION**

Claims in the application are: 1-13.

B. **STATUS OF ALL THE CLAIMS IN APPLICATION**

1. Claims pending: 1-4 and 6-12.
2. Claims previously cancelled: 5 and 13.
3. Claims withdrawn: None.
4. Claims rejected: 1-4 and 6-12.
5. Claims allowed: None.
6. Claims cancelled in accompanying amendment: None.

C. **CLAIMS ON APPEAL**

The claims on appeal are: 1-4 and 6-12.

IV. STATUS OF AMENDMENTS

Amendments to claim 1 were filed after final rejection and entered by the Examiner.

V. SUMMARY OF CLAIMED SUBJECT MATTER

The present invention recited in claim 1 provides a system for data transmission and reception. (See application, page 3, lines 2-4). The system includes a wireless data broadcast system that broadcasts outgoing data from a data network to a plurality of users. (See page 5, lines 7-10) The broadcast system includes one or more broadcast repeaters that receive data at a first frequency and retransmit said data at a second frequency. (See page 9, lines 3-6 and Fig. 5) These broadcast repeaters incorporate satellite data transmission technology that includes omnidirectional antennas that transmit data to users at more than 100 Mbps in a terrestrial line-of-sight multicast. (See page 11, lines 10-13)

The system also includes an independent return path system that receives incoming data from said plurality of users and provides the incoming data to the data network. (See page 11, lines 22-23) The return path system includes one or more wireless collector systems receiving data from a predetermined set of the plurality of users. (See page 8, lines 20-24) The return path system also includes one or more return path system repeaters that receive data at a third frequency from one or more predetermined wireless collector systems and retransmit said data at a fourth frequency. (See page 9, lines 7-9)

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

Claims 1-4 and 6-12 are rejected under 35 USC §103(a) as being unpatentable over Judd et al. (US Pub. No. 2004/0110469) in view of Pecus et al. (US Pub. No. 2007/0255829).

VII. ARGUMENTS

REJECTION OF CLAIMS 1-4 AND 6-12 UNDER 35 U.S.C. 103(a)

Prior to discussing the specific claims under appeal, we shall look first at the final rejection. With regard to the rejection of claims 1-6 and 6-12, the Examiner writes:

> Regarding claim Judd [sic] discloses a system for data transmission and reception comprising (abstract):
>
> (a) a wireless data broadcast system that broadcasts outgoing data from a data network to a plurality of users (Fig. 35 and 36, and page 9 par. 0172 – 0173; a base station is broadcasting signals to mobile subscribers); wherein said broadcast system includes one or more broadcast repeaters that receive data at one frequency and retransmit said data at another frequency (see page 7, par. 0145, pg. 8, par. 0161 – 0163; the frequency is converted) and wherein the broadcast system incorporates satellite data transmission technology in a terrestrial line-of-sight environment (see pg. 18, par. 0260 – 0264; signals transmitted by satellites are transmitted inside a structure)
>
> (b) a wireless data return path system that receives incoming data from said plurality users [sic] and provides the incoming data to said data network, wherein the wireless data return path system includes (see pg. 7, par. 0145 – 0146; the conversion unit works in the reverse directions as well):
>
> one or more wireless collector systems receiving data from a predetermined set of the plurality of users (pg. 9, par. 9171 [sic] – 0174; a mobile-facing antenna exchanges singles [sic] with mobile subscribers); and
>
> one or more return path system repeaters that receive data at one frequency from one or more predetermined wireless collector systems and retransmit said data at another frequency ((see page 7, par. 0145, pg. 8, par. 0161 – 0163; the frequency is converted downlink and uplink).

With regard to the limitation of using satellite data transmission technology, the Examiner writes:

> Judd does not explicitly teach wherein the broadcast repeater system incorporates satellite data transmission technology that includes antennas that transmit data users [sic] at more than 100 Mbps in a terrestrial line-of-sight multicast. However, Pecus teaches wherein the broadcast repeater system incorporates satellite data transmission technology that includes omnidirectional antennas (par. 0109; "receive only" antenna) that transmit data to users at more than 100 Mbps in a terrestrial line-of-sight multicast (see par. 0112).

Claim 1 of the present application, as amended, recites:

1. A system for data transmission and reception comprising:
   (a) a wireless data broadcast system that broadcasts outgoing data from a data network to a plurality of users, wherein said wireless data broadcast system includes one or more broadcast repeaters that receive data at a first frequency and retransmit said data at a second frequency, and wherein the broadcast repeaters incorporate satellite data transmission technology that includes omnidirectional antennas that transmit data to users at more than 100 Mbps in a terrestrial line-of-sight multicast; and
   (b) a wireless data return path system that receives incoming data from said plurality of users and provides the incoming data to said data network, wherein the wireless data return path system includes:
      one or more wireless collector systems receiving data from a predetermined set of the plurality of users; and
      one or more return path system repeaters that receive data at a third frequency from one or more predetermined wireless collector systems and retransmit said data at a fourth frequency.

The present invention utilizes four unique frequencies for the broadcast and return paths (frequencies F1, F2, F3, and F4; see paragraphs 0032 and 0033 of the published application). The broadcast path and return path in the present invention are independent and are not mirror images of each other.

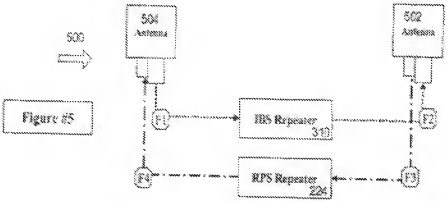
The Judd invention provides a way to improve isolation between antennae on opposite sides of a flat-panel repeater. One side of the repeater transmits to and receives from a base station. The other side transmits to and receives from mobile users. The Judd invention employs orthogonal antennae on opposite sides of the flat-panel repeater in order to improve isolation between them. The antennae on opposite sides of the repeater are fixed in position to assure maximum isolation and maximum gain.

Judd supplements this orthogonal arrangement with other methods to further improve isolation of the signals. One approach is the use of radio frequency chokes in the enclosure of the repeater between the antennae to reduce coupling between the antennae. Another is the use of an adaptive interference canceller to provide additional gain and phase margin. Alternatively, antenna elements on opposite side of the repeater might produce circularly polarized radiation patterns. As pointed out by the Examiner,

another method for improving isolation between the antennae is to have the wireless connection to the base station on a different frequency band from the wireless connection to mobile users. However, this use of different frequencies in Judd is not the same as that recited in the claimed invention.

In the Judd invention the use of different frequencies is divided between the two sides of the repeater. It is not divided between a broadcast path and a return path, each with their own repeaters, as in the present invention. Judd discloses receiving a signal at a first frequency at either the base station-facing side or mobile side and retransmitting the amplified signal on the opposite side at either the same frequency or a second frequency to improve isolation of the antennae. Return path transmissions follow the same path in reverse, received at the first (or second) frequency and retransmitted on the other side at the first frequency. Therefore, transmission and reception from the repeater only involve one or two frequencies, and the broadcast and return paths both go through the same repeater. This is true even when the repeaters are daisy chained, which increases the number of repeaters through which the signals pass but does not divide the broadcast and return paths between separate repeaters.

In contrast to Judd, the present invention divides the broadcast and return paths between separate repeaters. These paths are each one way. The broadcast repeater(s) of the present invention receive and retransmit data at two different frequencies. The return path repeater(s) in turn receive and retransmit data at two other frequencies which are different from those used by the broadcast repeaters. This configuration is best illustrated by Figure 5 of the present application.



The broadcast path goes through repeater 310, and the return path goes through repeater 224. Both transmission paths are independent of each other.

In most embodiments of Judd, the signal is down-converted to an intermediate frequency for filtering between the two antennae of the repeater and then up-converted back to the original frequency or a second frequency. However, this intermediate frequency is only used internally within the repeater to avoid interference with the transmission bands and is not used in any transmissions.

The sections of Judd to which the Examiner refers do not teach the limitations of the claimed invention. Specifically, paragraph 145 reads:

> [0145] If it is desired to distribute multiple wireless services within a building, such as PCS, MMMDS, LMDS, wireless LAN, cellular telephone, etc., all such signals may be supplied from their receiving antenna(s) to an Ethernet hub before entering the daisy-chained indoor repeaters, as illustrated in FIGS. 23a and 23b. A separate antenna 110 and electronic circuits 111 are provided for each wireless service, and all the circuits 111 are connected to an Ethernet hub 112. Each of the circuits 111 includes a frequency converter for converting signals from the frequency used by the wireless service to an Ethernet frequency. The Ethernet hub 112 controls the forwarding of the signals from the multiple wireless links to the single wired connection from the Ethernet hub 112 to an indoor flat-panel repeater 113, which then relays those signals on to other repeaters such as repeaters 114 and 115 located throughout the interior of the building.

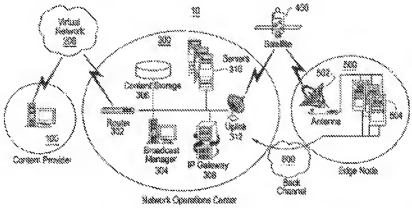
As can be seen this section of Judd merely discloses the use of an Ethernet hub to collect signals from multiple types of sources before forwarding the data to a flat-panel repeater.

Paragraphs 161-163 of Judd discuss the function of an adaptive cancellation circuit inside the flat panel repeater that removes feedback signals. This adaptive cancellation circuit has no direct relevance to the limitations of the claimed invention.

The discussion of GPS signals in paragraphs 260-264 of Judd relates to a method for repeating GPS signals to fill GPS null or "blank" areas within structures. This aspect of Judd involves the reception and repeating of actual GPS satellite signals by using a satellite antenna system in conjunction with the repeaters. Though the repeaters are repeating the satellite signals within the building, the repeaters themselves are not

actually incorporating satellite data transmission technology. In the Judd disclosure, the only satellite transmission technology is in the GPS satellite, not the terrestrial repeaters.

With regard to satellite transmission technology, Pecus does not teach the use of satellite transmission technology in a terrestrial line-of-sight multicast. Instead, Pecus uses a standard satellite transmission (a satellite in space) between a Network Operations Center (NOC) and an edge node, as shown in Figure 1 of Pecus below:



The edge node in turn delivers the data to a last mile service provider that provides the internet connection to the end user.

As can be seen in Figure 1, Pecus uses a standard satellite transmission via an orbiting satellite 400. In order for the satellite transmission technology to be used in a terrestrial line-of-sight multicast as recited in the claims, the data transmission between antenna 312 and antenna 502 would have to be directly between each other, without going through satellite 400 as taught in Pecus.

Paragraph [0109] to which the Examiner refers merely describes the structure and mounting of the edge node antenna 502. However, there is no mention of the use of this antenna for terrestrial line-of-sight transmission. Furthermore, paragraph [0108] specifically states that this antenna receives data from the satellite 400, not directly from the NOC antenna 312.

Paragraph [0112] describes a computer rack as shown in Figure 6. There is nothing in this description that refers to terrestrial line-of-sight transmissions at 100 Mbps. Rather, it describes Ethernet connections at 100 Mbps.

Therefore, Pecus does not disclose the invention features missing from Judd. Consequently, the proposed combination of Judd and Pecus does not produce the limitations of the claimed invention.

Because claims 2-4 and 6-12 depend from claim 1, they are distinguished from Judd and Pecus for the reasons given above. In addition, the dependent claims recite limitations not taught or suggested by Judd and Pecus.

For example, claim 9 recites:

> 9. The system of claim 1 wherein broadcast repeaters and return path system repeaters are mounted in different locations.

As explained above, the Judd system uses the same repeaters for both the broadcast and return paths. Therefore, it would be impossible for the Judd system to place the broadcast path repeaters and return path repeaters in separate locations since they are one and the same.

In view of the above, Applicant respectfully submits that the rejection of claims 1-4 and 6-12 is overcome and should not be sustained.

The claims are therefore allowable.

CONCLUSION

In view of the above arguments, Appellant respectfully submits that all the extant claims are allowable over the cited prior art and that the application is in condition for allowance. Accordingly, Appellant respectfully requests the Board of Patent Appeals and Interferences to overturn the rejections set forth in the Final Office Action.

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Respectfully submitted,

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VIII. APPENDIX OF CLAIMS ON APPEAL

1. A system for data transmission and reception comprising:

(a) a wireless data broadcast system that broadcasts outgoing data from a data network to a plurality of users, wherein said wireless data broadcast system includes one or more broadcast repeaters that receive data at a first frequency and retransmit said data at a second frequency, and wherein the broadcast repeaters incorporate satellite data transmission technology that includes omnidirectional antennas that transmit data to users at more than 100 Mbps in a terrestrial line-of-sight multicast; and

(b) a wireless data return path system that receives incoming data from said plurality of users and provides the incoming data to said data network, wherein the wireless data return path system includes:

one or more wireless collector systems receiving data from a predetermined set of the plurality of users; and

one or more return path system repeaters that receive data at a third frequency from one or more predetermined wireless collector systems and retransmit said data at a fourth frequency.

2. The system of claim 1 wherein the data network is the Internet.

3. The system of claim 1 wherein at least one of the plurality of users receives the outgoing data from the one or more wireless broadcast repeaters with an antenna.

4. The system of claim 1 wherein the wireless data broadcast system further comprises:

one or more distributors to distribute the outgoing data from the wireless broadcast repeaters to the plurality of users.

5. (Canceled)

6. The system of claim 1 further comprising a hub to retrieve data in response to user requests and broadcast said data from the data network to the one or more wireless broadcast repeaters.

7. The system of claim 6 wherein the hub also receives incoming data from the one or more wireless collector systems.

8. The system of claim 1 wherein broadcast repeaters and return path system repeaters are mounted in the same location.

9. The system of claim 1 wherein broadcast repeaters and return path system repeaters are mounted in different locations.

10. The system of claim 4 wherein distributors and collector systems are mounted in the same location.

11. The system of claim 10 wherein the distributors and collector systems are mounted in the same housing.

12. The system of claim 4 wherein distributors and collector systems are mounted in different locations.

13. (Canceled)

APPENDIX OF EVIDENCE

No affidavits have been submit and relied upon by the Appellant under 37 CFR §§ 1.130, 1.131, or 1.132 in the pending appeal.

APPENDIX OF RELATED PROCEEDINGS

There have been no decisions rendered by a court or the Board in any proceeding pursuant to 37 CFR 41.37 (c)(1)(ii).